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| EXAMINER | |
|---|---|
| DSOUZA, JOSEPH FRANCIS A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2611 | |

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/614,366 | MIAO, GEORGE J. | |
| | Examiner | Art Unit | |
| | Adolf DSouza | 2611 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

### *Drawings*

1. The drawings are objected to because in Figures 8 and 14, "Commuter" is misspelled. The correct spelling is "Commutator". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

2. The disclosure is objected to because of the following informalities: In the specification the following corrections should be made:

- On page 1, line 10, "scare" should be changed to "scarce".
- On page 2, line 8, "also satisfy by the part" should be changed to "also satisfy the part".
- On page 3, Equation (2), the negative sign should be changed to a positive sign, since the average is computed, as stated in line 10.
- On page 4, line 4, "transmission of data" should be changed to "transmit data".
- On page 4, line 14, "need of the spread" should be changed to "need of spread".
- On page 5, line 2, "block diagram of showing one embodiment" should be changed to "block diagram of one embodiment".
- On page 5, line 6, "block diagram of showing" should be changed to "block diagram of".
- On page 5, line 9, "block diagram of showing one embodiment" should be changed to "block diagram of one embodiment".
- On page 5, line 12, "block diagram of showing a polyphase" should be changed to "block diagram of a polyphase".

- On page 5, line 15, "table of containing" should be changed to ""table of".
- On page 6, line 1, "block diagram of showing one embodiment" should be changed to "block diagram of one embodiment".
- On page 6, line 8, "forth" should be changed to "fourth".
- On page 6, line 19, "block diagram of showing" should be changed to "block diagram of ".
- On page 6, line 22, "block diagram of showing" should be changed to "block diagram of ".
- On page 7, line 23, "section 120 in which" should be changed to "section 120 which".
- On page 9, line 27, "are down sampling of 11 by using delay" should be changed to "are down sampled by a factor of 11 using delay ".
- On page 10, line 11, "mapping 238 according some embodiments" should be changed to "mapping 238 according to a second embodiment".
- On page 12, line 19, "odd symmetric" should be changed to "even symmetric".

- On page 14, lines 2 and 10, "odd symmetric" should be changed to "even symmetric".

- On page 16, line 7, "There does not have the fourth channel" should be changed to "There is no fourth channel".

- On page 16, line 9, "By no transmitting" should be changed to "By not transmitting".

- On page 16, line 13, "coexistences" should be changed to "coexistence".

- On page 17, line 5, "there does not have the fifth channel" should be changed to "there is no fifth channel".

- On page 17, line 7, "By no transmitting" should be changed to "By not transmitting".

- On page 17, line 12, "coexistences" should be changed to "coexistence".

- On page 17, line 19, "By no transmitting" should be changed to "By not transmitting".

- On page 17, line 26, "by no transmitting" should be changed to "by not transmitting".

- On page 19, line 15, "diagram 1400 of showing" should be changed to "diagram 1400 showing".

Appropriate correction is required.

3. The abstract of the disclosure is objected to because:

- UWB should be changed to "Ultra-Wideband (UWB)".
- In line 8, "...802.11 at the same environment" should be changed to ...802.11 in the same environment

Correction is required. See MPEP § 608.01(b).

***Claim Objections***

4. Claims 1, 6, 11, 13, 16, 20, 21 are objected to because of the following informalities:

- Regarding claims 1 the preamble should be changed to "...communication transceiver for ... comprising" to state the purpose of the invention.
- Claims 6, 11, 13, 16, 20, 21 should be changed similarly.

- Regarding claim 11, "orthogonal each other" should be changed to "orthogonal to each other".

- Regarding claim 1, the acronym UWB should be changed to "Ultra-Wideband (UWB)".

- Regarding claim 20, the acronym WLAN should be changed to "Wireless Local Area Network (WLAN)".

- Regarding claim 6, the acronym XOR should be changed to "Exclusive OR (XOR)".

- Regarding claim 16, the spelling of "commuter" should be corrected to "commutator".

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1 – 2, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crochiere et al. (Multirate Digital Signal Processing; 1983; Prentice-Hall) in view of

Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17 - 21, 2002; IEEE Globecom 2002; pages 2260 – 2264) and further in view of Fattouche et al. (US RE37802).

Regarding claim 1, Crochiere discloses a multichannel modulation communication transceiver (page 292, Fig, 7.3; page 299, Fig. 7.8, element "Synthesizer"; page 290, section 7.1 – page 300, end of section 7.2.1) .

Crochiere does not disclose a UWB system and a spread spectrum system that uses PN sequences.

In the same field of endeavor, however, Tewfik discloses a UWB communication transceiver (section II which describes the transmitter side, up to section A; section 1V – receiver side).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Tewfik, in the system of Crochiere because this would allow the multichannels synthesized by the low pass filter to be transmitted in the UWB range, as disclosed by Tewfik (page 2261, Equations 1 and 2).

In the same field of endeavor, however, Fattouche discloses a multichannel PN sequence mapping and a PN sequence look-up table (Fig. 1, elements c(1) ...C(N); column 3, line 64 – column 4, line 12; wherein the PN sequence lookup table is the PN sequence source 16).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Fattouche, in the system of Crochiere because this would allow the symbols in each channel to be spread, thereby providing orthogonality on the channels and also advantages of spread spectrum e.g. robustness to narrowband interference, as is well known in the art.

Regarding claim 2, Crochiere does not disclose that PN sequence is used to generate all multichannels and with each multichannel having a chip data rate of 650 cps.

In the same field of endeavor, however, Fattouche discloses multichannel PN sequence mapping is used to generate a multichannel signal, with each of multichannel signal at the chip data rate of 650 Mcps (Fig. 1, elements c(1) ...C(N); column 3, line 64 – column 4, line 12; wherein the chip data rate of 650 Mcps is a design parameter that is of ordinary skill in the art can calculate based on the symbol rate and chip spreading factor).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Fattouche, in the system of Crochiere because this would allow the symbols in each channel to be spread, thereby providing orthogonality on the channels and also advantages of spread spectrum e.g. robustness to narrowband interference, as is well known in the art.

In the same field of endeavor, however, Tewfik discloses a UWB signals (section II which describes the transmitter side, up to section A; section 1V – receiver side).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Tewfik, in the system of Crochiere because this would allow the multichannels synthesized by the low pass filter to be transmitted in the UWB range, as disclosed by Tewfik (page 2261, Equations 1 and 2).

Regarding claim 4, Crochiere disclose that the multichannels are orthogonal to each other (page 292, Fig. 7.3 (a); wherein the orthogonality is obtained since the channels occupy different regions of the spectra).

The limitation regarding PN sequences used to generate the channels is analyzed as in claim 1 above.

7. Claim 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crochiere et al. (Multirate Digital Signal Processing; 1983; Prentice-Hall) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17 - 21, 2002; IEEE Globecom 2002; pages 2260 – 2264) and further in view of Fattouche et al. (US RE37802) and Hudson (US 20030043887).

Regarding claim 3, Crochiere does not disclose 16 orthogonal spreading codes.

In the same field of endeavor, however, Hudson discloses PN sequence look-up table produces 16-orthogonal spreading sequence with 16-bit code (page 15, paragraph 169).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Hudson, in the system of Crochiere because this would allow the symbols in each channel to be spread, thereby providing orthogonality on the channels and also advantages of spread spectrum e.g. robustness to narrowband interference, as is well known in the art.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crochiere et al. (Multirate Digital Signal Processing; 1983; Prentice-Hall) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17 - 21, 2002; IEEE Globecom 2002; pages 2260 – 2264) and further in view of Fattouche et al. (US RE37802) and view of Van Nee (US 6,175,550).

Regarding claim 5, Crochiere discloses a multichannel system (page 292, Fig, 7.3; page 299, Fig. 7.8, element "Synthesizer"; page 290, section 7.1 – page 300, end of section 7.2.1).

Crochiere does not disclose that the data rate can be changed by shutting off some of the channels and a UWB system.

In the same field of endeavor, however, Van Nee discloses produce the scalability data rates with multi-carrier frequencies (column 3, lines 21 – 27; column 11, lines 23 - 28).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Van Nee, in the system of Crochiere because this would allow the data rate to be varied, as disclosed by Van Nee.

In the same field of endeavor, however, Tewfik discloses a UWB communication transceiver (section II which describes the transmitter side, up to section A; section 1V – receiver side).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Tewfik, in the system of Crochiere because this would allow the multichannels synthesized by the low pass filter to be transmitted in the UWB range, as disclosed by Tewfik (page 2261, Equations 1 and 2).

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 6,490,267) in view of Sklar (Digital Communications; 2001; Prentice Hall; pages 732 - 735).

Regarding claim 6, Kim discloses a multichannel PN sequence mapping comprising: a set of delay units (Fig. 14, element 515; column 8, lines 13 - 36) and a set of down-sampling units (Fig. 8; element 222; column 6, lines 43 - 49).

Kim does not explicitly disclose that the PN multiplier is an XOR operation.

In the same field of endeavor, however, Sklar discloses a set of XOR units (page 733, Fig. 12.9 (b), "product" of (t) and g(t); page 734, Fig. 12.10, waveforms (a), (b) and (c); wherein, as can be seen from the waveforms, the XOR operation is performed on x(t) and g(t) to give x(t)g(t)).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Sklar, in the system of Kim because this would allow the input symbols to be spread, as is well known in the art.

10. Claim 7 – 9 are under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 6,490,267) in view of Sklar (Digital Communications; 2001; Prentice Hall; pages 732 - 735) and further in view of Harrison (US 5,396,489).

Regarding claim 7, Kim discloses the delay and down-sampling units (Fig. 14, element 515; column 8, lines 13 – 36; Fig. 8; element 222; column 6, lines 43 - 49).

Kim does not disclose a multichannel system.

In the same field of endeavor, however, Harrison discloses a set of multichannel, which may be equivalent and implemented in parallel (Fig. 2; column 3, line 60 – column 4, line 25).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Harrison, in the system of Kim because this would allow the input signal to be spread over multiple channels, thereby allowing the data rate to be increased or multi-user system, as is well known in the art.

Regarding claim 8, Kim does not disclose a polyphase-based multichannel.

In the same field of endeavor, however, Harrison discloses said the set of multichannel is equivalent to the implementation structure of polyphase-based multichannel (Fig. 2; column 3, line 60 – column 4, line 25; wherein the polyphase obtained by decimating the input signal into several sub-streams, as shown by the left commutator in Fig. 2).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Harrison, in the system of Kim because this would allow the input signal to be spread over multiple channels, thereby allowing the data rate to be increased or multi-user system, as is well known in the art.

Regarding claim 9, Kim does not disclose a commutator to generate the multiple channels.

In the same field of endeavor, however, Harrison discloses the analyzed sequence switch, which is equivalent to the implementation structure of polyphase-based multichannel, is a counterclockwise circuit that takes on one of the positions with rotating at uniform speed (Fig. 2, commutators shown at input and output).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Harrison, in the system of Kim because this would allow the input signal to be spread over multiple channels, thereby allowing the data rate to be increased or multi-user system, as is well known in the art.

11. Claim 10 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 6,490,267) in view of Sklar (Digital Communications; 2001; Prentice Hall; pages 732 - 735) and further in view of Hudson (US 20030043887).

Regarding claim 10, Kim does not disclose XOR units and 16 PN chip sequences.

In the same field of endeavor, however, Sklar discloses a set of XOR units (page 733, Fig. 12.9 (b), "product" of (t) and g(t); page 734, Fig. 12.10, waveforms (a), (b) and (c); wherein, as can be seen from the waveforms, the XOR operation is performed on x(t) and g(t) to give x(t)g(t)).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Sklar, in the system of Kim because this would allow the input symbols to be spread, as is well known in the art.

In the same field of endeavor, however, Hudson discloses PN sequence look-up table produces 16-orthogonal spreading sequence with 16-bit code (page 15, paragraph 169).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Hudson, in the system of Crochiere because this would allow the symbols in each channel to be spread, thereby providing orthogonality on the channels and also advantages of spread spectrum e.g. robustness to narrowband interference, as is well known in the art.

Regarding claim 11, Kim does not disclose that the 16 PN sequences are orthogonal.

In the same field of endeavor, however, Hudson discloses 16 PN chip sequences are orthogonal each other for the entire multichannel (page 15, paragraph 169).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Hudson, in the system of Crochiere because this would allow the symbols in each channel to be spread, thereby providing orthogonality on the channels and also advantages of spread spectrum e.g. robustness to narrowband interference, as is well known in the art.

Claim 12 is similarly analyzed as claim 11, with the orthogonality being obtained since the spreading codes are orthogonal.

12. Claims 13 - 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crochiere et al. (Multirate Digital Signal Processing; 1983; Prentice-Hall) in view of McClellan (A Unified Approach to the Design of Optimum FIR Linear Phase Digital Filters; Nov. 1973; IEEE Transactions on Circuit Theory; pages 697 – 701) and further in view of Fattouche et al. (US RE37802).

Regarding claim 13 - 14, Crochiere discloses a digital FIR lowpass-shaping filter (page 258, section 6.1.2).

Crochiere does not disclose a filter with multiple transition bands.

In the same field of endeavor, however, McClellan discloses a lowpass band 0 - 0.26 (GHz); a first transition band 0.26 - 0.325 (GHz) ; a second transition band 0.325 - 0.39 (GHz) ; a third transition band 0.39 - 0.45 (GHz) ; and a stop band 0.45 - 0.5 (GHz) (page 697; section I, 1st paragraph and last 3 lines; wherein the mask is interpreted as being one of the arbitrary filter specifications that can be designed using the Remez algorithm for FIR filter design, with the frequencies of the passband, transition band and stop band being a choice of the designer. One of ordinary skill in the art can easily choose the breakpoints in the frequencies and then use Remez algorithm to generate the filter coefficients.).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by McClellan, in the system of

Crochiere because this would allow any mask to be designed and filter coefficients generated using Remez algorithm.

Regarding claim 15, Crochiere disclose that one digital lowpass FIR shaping filter is needed for the use in all of said multichannel. (Fig. 7.8, filter f(n) that is used for each channel; page 297, section 7.2.1).

13. Claims 16 - 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graham (US 5,412,352) in view of Harrison (US 5,396,489).

Regarding claim 16, Graham discloses a multichannel based multi-carrier modulation comprising: a analog lowpass filter and selectable multi-carrier frequencies (Fig. 3, elements 62, 66, 72; column 3, lines 21 – 25).

Graham does not disclose a commutator unit.

In the same field of endeavor, however, Harrison discloses a commutator unit (Fig. 2).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Harrison, in the system of Graham because this would allow a input signal, in this case a carrier frequency, to be selected, as is well know in the art.

Regarding claim 17, Graham discloses producing one of the multi-carrier frequencies by controlling a switch (Fig. 2, element 72; column 3, lines 26 – 30; wherein the multicarrier frequency is obtained through the microprocessor).

The limitation regarding the commutator is as analyzed in claim 16 above.

Regarding claim 18, Graham discloses that the selectable multi-carrier frequencies contain the entire multichannel carrier frequencies in which may be programmable to control the multichannel (Fig. 2, element 72, 66; column 3, lines 21 – 30; wherein the multicarrier frequencies are provided by the microprocessor 72).

14. Claims 19 - 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graham (US 5,412,352) in view of Harrison (US 5,396,489) and further in view of Agee (US 6,128,276).

Regarding claim 19, Graham does not disclose shutting off a channel to avoid interference with WLAN 802.11a.

In the same field of endeavor, however, Agee discloses selecting some of the multichannel carrier frequencies for use in the transmitting data to avoid the interference with WLAN 802.11a. (column 2, lines 25 – 29; wherein the WLAN interference is interpreted as the interference that a channel sees).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Agee, in the system of Crochiere because this would allow the receiver's to work properly when interference on the same channel is present, as disclosed by Agee.

Claim 20 is similarly analyzed as claim 19, except that the channels shut off are specific channels 4 and/or 5 where the interference falls.

15. Claims 21 - 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umeda (US 4,170,760) in view of Harrison (US 5,396,489).

Regarding claim 21, Umeda discloses a multichannel based multi-carrier down converter comprising: a analog bandpass filter; a down converter unit; a multichannel filter; and selectable multi-carrier frequencies (Fig. 1, elements 3, 4, 5, 6, 16; column 2, line 46 – column 3, line 7; wherein the analog bandpass filter is the RF amp, the down converter is the mixer 4, the multichannel filter is the IF amplifier and the selectable carrier frequencies are obtained from element 16).

Umeda does not disclose a commutator unit.

In the same field of endeavor, however, Harrison discloses a commutator unit (Fig. 2).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Harrison, in the system of

Graham because this would allow a input signal, in this case a carrier frequency, to be selected, as is well know in the art.

Regarding claim 22, Umeda discloses the down converter produces the multi-baseband signals by using multi-carrier frequencies which is controlled by using a switch (Fig. 1, elements 3, 4, 5, 6, 16; column 2, line 46 – column 3, line 7; wherein the multicarrier frequency is provided by element 16).

The limitation regarding the commutator is as analyzed in claim 21 above.

16. Claims 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Umeda (US 4,170,760) in view of Harrison (US 5,396,489) and further in view of Van Nee (US 6,175,550).

Regarding claim 23, Umeda discloses the selectable multi-carrier frequencies contain all the multichannel carrier frequencies (Fig. 1, elements 3, 4, 5, 6, 16; column 2, line 46 – column 3, line 7; wherein the multicarrier frequency is provided by element 16).

Umeda does not disclose scalability.

In the same field of endeavor, however, Van Nee discloses produce the scalability data rates with multi-carrier frequencies (column 3, lines 21 – 27; column 11, lines 23 - 28).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Van Nee, in the system of Crochiere because this would allow the data rate to be varied, as disclosed by Van Nee.

***Other Prior Art Cited***

17. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

The following patents are cited to further show the state of the art with respect to multichannel systems and multistage filters:

Libove et al. (US 6433720) discloses use pulse generator for UWB systems.

Miller et al. (US 20030067963) discloses a mode controller for signal acquisition and tracking in an ultra wideband communication system.

McCorkle et al. (US 6505032) discloses carrier less ultra wideband wireless signals for conveying application data.

***Contact Information***

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adolf DSouza whose telephone number is 571-272-1043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Adolf DSouza
Examiner
Art Unit 2611

AD

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER